

	A	B	C	D	E	F	G	H	I	J	K
1	<b>UCL Statistics for Data Sets with Non-Detects</b>										
2	#VALUE!										
3	User Selected Options		#VALUE!								
4	Date/Time of Computation		6/12/2018 2:49:56 PM								
5	From File		ProUCL Input Nonporous Surfaces-3 Floor grates and drains (060518) .xls								
6	Full Precision		OFF								
7	Confidence Coefficient		95%								
8	Number of Bootstrap Operations		2000								
9	#VALUE!										
10	<b>Total PCBs</b>										
11	#VALUE!										
12	<b>General Statistics</b>										
13	Total Number of Observations				9			Number of Distinct Observations			
14	Number of Detects				6			Number of Non-Detects			
15	Number of Distinct Detects				5			Number of Distinct Non-Detects			
16	Minimum Detect				0.67			Minimum Non-Detect			
17	Maximum Detect				2.4			Maximum Non-Detect			
18	Variance Detects				0.697			Percent Non-Detects			
19	Mean Detects				1.58			SD Detects			
20	Median Detects				1.6			CV Detects			
21	Skewness Detects				-0.0331			Kurtosis Detects			
22	Mean of Logged Detects				0.321			SD of Logged Detects			
23	#VALUE!										
24	<b>Note: Sample size is small (e.g., &lt;10), if data are collected using ISM approach, you should use</b>										
25	<b>guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.</b>										
26	<b>For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).</b>										
27	<b>Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0</b>										
28	#VALUE!										
29	<b>Normal GOF Test on Detects Only</b>										
30	Shapiro Wilk Test Statistic				0.794			<b>Shapiro Wilk GOF Test</b>			
31	5% Shapiro Wilk Critical Value				0.788			Detected Data appear Normal at 5% Significance Level			
32	Lilliefors Test Statistic				0.271			<b>Lilliefors GOF Test</b>			
33	5% Lilliefors Critical Value				0.362			Detected Data appear Normal at 5% Significance Level			
34	<b>Detected Data appear Normal at 5% Significance Level</b>										
35	#VALUE!										
36	<b>Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs</b>										
37	Mean				1.329			Standard Error of Mean			
38	SD				0.721			95% KM (BCA) UCL			
39	95% KM (t) UCL				1.824			95% KM (Percentile Bootstrap) UCL			
40	95% KM (z) UCL				1.767			95% KM Bootstrap t UCL			
41	90% KM Chebyshev UCL				2.128			95% KM Chebyshev UCL			
42	97.5% KM Chebyshev UCL				2.992			99% KM Chebyshev UCL			
43	#VALUE!										
44	<b>Gamma GOF Tests on Detected Observations Only</b>										
45	A-D Test Statistic				0.653			<b>Anderson-Darling GOF Test</b>			
46	5% A-D Critical Value				0.7			Detected data appear Gamma Distributed at 5% Significance Level			
47	K-S Test Statistic				0.303			<b>Kolmogorov-Smirnov GOF</b>			
48	5% K-S Critical Value				0.334			Detected data appear Gamma Distributed at 5% Significance Level			
49	<b>Detected data appear Gamma Distributed at 5% Significance Level</b>										
50	#VALUE!										
51	<b>Gamma Statistics on Detected Data Only</b>										
52	k hat (MLE)				3.834			k star (bias corrected MLE)			
53	Theta hat (MLE)				0.412			Theta star (bias corrected MLE)			
54	nu hat (MLE)				46			nu star (bias corrected)			
55	MLE Mean (bias corrected)				1.58			MLE Sd (bias corrected)			
56	#VALUE!										
57	<b>Gamma Kaplan-Meier (KM) Statistics</b>										
58	k hat (KM)				3.399			nu hat (KM)			
59	Approximate Chi Square Value (61.17, $\alpha$ )				44.19			Adjusted Chi Square Value (61.17, $\beta$ )			
60	95% Gamma Approximate KM-UCL (use when n>=50)				1.84			95% Gamma Adjusted KM-UCL (use when n<50)			
61	#VALUE!										
62	<b>Gamma ROS Statistics using Imputed Non-Detects</b>										
63	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs										
64	GROS may not be used when kstar of detected data is small such as < 0.1										
65	For such situations, GROS method tends to yield inflated values of UCLs and BTVs										
66	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates										
67	Minimum				0.586			Mean			
68	Maximum				2.4			Median			
69	SD				0.757			CV			
70	k hat (MLE)				3.817			k star (bias corrected MLE)			
71	Theta hat (MLE)				0.356			Theta star (bias corrected MLE)			
72	nu hat (MLE)				68.71			nu star (bias corrected)			
73	MLE Mean (bias corrected)				1.36			MLE Sd (bias corrected)			

	A	B	C	D	E	F	G	H	I	J	K
74					#VALUE!	#VALUE!					Adjusted Level of Significance ( $\beta$ )
75					Approximate Chi Square Value (47.14, $\alpha$ )	32.38					Adjusted Chi Square Value (47.14, $\beta$ )
76					95% Gamma Approximate UCL (use when $n >= 50$ )	1.979					95% Gamma Adjusted UCL (use when $n < 50$ )
77					#VALUE!						
78					<b>Lognormal GOF Test on Detected Observations Only</b>						
79					Shapiro Wilk Test Statistic	0.82					<b>Shapiro Wilk GOF Test</b>
80					5% Shapiro Wilk Critical Value	0.788					Detected Data appear Lognormal at 5% Significance Level
81					Lilliefors Test Statistic	0.286					<b>Lilliefors GOF Test</b>
82					5% Lilliefors Critical Value	0.362					Detected Data appear Lognormal at 5% Significance Level
83					<b>Detected Data appear Lognormal at 5% Significance Level</b>						
84					#VALUE!						
85					<b>Lognormal ROS Statistics Using Imputed Non-Detects</b>						
86					Mean in Original Scale	1.35					Mean in Log Scale
87					SD in Original Scale	0.757					SD in Log Scale
88					95% t UCL (assumes normality of ROS data)	1.819					95% Percentile Bootstrap UCL
89					95% BCA Bootstrap UCL	1.82					95% Bootstrap t UCL
90					95% H-UCL (Log ROS)	2.133					#VALUE!
91					#VALUE!						
92					<b>UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed</b>						
93					KM Mean (logged)	0.146					95% H-UCL (KM -Log)
94					KM SD (logged)	0.513					95% Critical H Value (KM-Log)
95					KM Standard Error of Mean (logged)	0.194					#VALUE!
96					#VALUE!						
97					<b>DL/2 Statistics</b>						
98					<b>DL/2 Normal</b>			<b>DL/2 Log-Transformed</b>			
99					Mean in Original Scale	1.387					Mean in Log Scale
100					SD in Original Scale	0.721					SD in Log Scale
101					95% t UCL (Assumes normality)	1.834					95% H-Stat UCL
102					<b>DL/2 is not a recommended method, provided for comparisons and historical reasons</b>						
103					#VALUE!						
104					<b>Nonparametric Distribution Free UCL Statistics</b>						
105					<b>Detected Data appear Normal Distributed at 5% Significance Level</b>						
106					#VALUE!						
107					<b>Suggested UCL to Use</b>						
108					95% KM (t) UCL	1.824					95% KM (Percentile Bootstrap) UCL
109					#VALUE!						
110					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL						
111					Recommendations are based upon data size, data distribution, and skewness.						
112					These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).						
113					However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician						
114					#VALUE!						

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13	6
14	3
15	1
16	2
17	2
18	33.33%
19	0.835
20	0.529
21	-3.079
22	0.59
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37	0.266
38	1.801
39	1.802
40	1.873
41	2.49
42	3.978
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46	ce Level
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48	ce Level
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52	2.028
53	0.779
54	24.33
55	1.11
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58	61.17
59	41.16
60	1.975
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67	1.36
68	1
69	0.557
70	2.619
71	0.519
72	47.14
73	0.84

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74	0.0231
75	29.83
76	2.149
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80	level
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82	level
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86	0.164
87	0.545
88	1.763
89	1.899
90	#VALUE!
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93	1.986
94	2.248
95	#VALUE!
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99	0.214
100	0.493
101	2.061
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108	1.802
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